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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,061	08/01/2006	Harunari Shimamura	043888-0494	4340
20277 7590 03/20/2009 MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096				
EXAMINER				
RUTHKOSKY, MARK				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/588,061

**Applicant(s)**

SHIMAMURA ET AL.

**Examiner**

Mark Ruthkosky

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 8/1/2008 and 3/14/2008.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statements filed 8/1/2006 and 3/14/2008 have been placed in the application file, and the information referred to therein has been considered as to the merits.

### ***Drawings***

The drawings filed on 8/1/2006 have been approved.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, the amounts of LiOH and the aluminum compound contained in the electrolyte in said negative electrode mixture are 0.1 to 2 wt% and 0.001 to 0.2 wt% of the negative electrode mixture, respectively. The negative electrode mixture is not claimed to

include an electrolyte. The electrolyte is claimed as a separate element of the battery. It is also not clear if the weight percentage is of the compound contained in the electrolyte that is then added to the negative electrode or if the weight percent is of the compound in the electrode. Therefore, the claim is indefinite. Further, there is no antecedent basis for the phrase, "contained in the electrolyte in said negative electrode." The same reasoning is applied to the rejection of claim 3.

With regard to claim 4, the weight ratio of the whole alkaline electrolyte to the zinc alloy of the negative electrode is 0.1 to 2 is indefinite because it is not clear what defines the whole alkaline electrolyte. The electrolyte includes a salt, possible disclosed additives and other materials dissolved in an aqueous solution. Further, the electrolyte salt is disclosed as being in a separate aqueous solution. Thus, the weight of the electrolyte is based on some the combination of these elements. It is not clear which of these elements are included in the electrolyte. For example, it may include just the salt, all the elements including additives and/or all the materials noted plus the solvent.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Eylem et al. (US 7,049,030.)

The instant claims are to alkaline battery comprising: a negative electrode including a negative electrode mixture that contains a zinc alloy as an active material, said zinc alloy containing at least aluminum; an alkaline electrolyte; and a positive electrode, wherein said alkaline electrolyte comprises an aqueous KOH solution and LiOH and an aluminum compound that are dissolved in said aqueous KOH solution.

Eylem et al. (US 7,049,030) teaches an alkaline battery comprising: a negative electrode including a negative electrode mixture that contains a zinc alloy as an active material, said zinc alloy containing at least aluminum (col. 5 and col. 6, lines 45-55); an alkaline electrolyte (col. 3, lines 30-60); and a positive electrode (col. 4), wherein said alkaline electrolyte comprises an aqueous KOH solution and LiOH ( col. 3, lines 30-40) and an aluminum compound that are dissolved in said aqueous KOH solution (col. 4, claims 1-16.) A portion of the electrolyte is dispersed in the negative electrode (col. 5, lines 10-20.) Thus, the claim is anticipated.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eylem et al. (US 7,049,030), as applied above in view of Noriyuki et al. (JP 2000-082503.)

The teachings of Eylem et al. have been presented. The reference does not teach that the amounts of LiOH and the aluminum compound contained in the electrolyte in said negative electrode mixture are 0.1 to 2 wt% and 0.001 to 0.2 wt% of the negative electrode mixture, respectively OR from 0.15 to 3 parts by weight and 0.0015 to 0.3 parts by weight per 100 parts by weight of said zinc alloy. Eylem et al. teaches that a portion of the electrolyte is dispersed throughout the negative electrode. The amount of aluminum in the electrolyte may be about 1% or less (col. 4, line10-22.) Further, since only a portion of the electrolyte is dispersed in the electrode, the amount of the aluminum compound would be a fraction of the amount found in the electrolyte. From this, it would have been obvious to one of ordinary skill in the art to include the aluminum compound contained in the electrolyte in said negative electrode mixture from 0.001 to 0.2 wt% of the negative electrode mixture in order to allow for ionic transfer to and from the electrode during the charge/discharge cycle of the battery and to suppress the solubility of the electrode materials in the electrolyte solution. Eylem et al. teaches that adding the aluminum compound to the battery suppresses the solubility of the electrode materials in the electrolyte solution.

Further, Noriyuki et al. (JP 2000-082503) teaches an alkaline battery comprising a negative electrode of zinc particles and an electrolyte of potassium hydroxide. The electrode also may include lithium hydroxide in an amount of 0.1-1% wt. (abstract.) Based on the teachings of the references, it would have been obvious to one of ordinary skill in the art to include the lithium hydroxide taught in Eylem in an amount of 0.1-1% wt., as taught by

Noriyuki, in order to effectively transfer ions to and from the electrode during the charge/discharge cycle of the battery and suppress the reactivity of the electrode materials with the electrolyte solution. Noriyuki et al. (JP 2000-082503) teaches the battery has improved properties because the zinc negative electrode is protected from corrosion from the potassium hydroxide solution.

The references do not teach that the weight ratio of the whole alkaline electrolyte to the zinc alloy of the negative electrode is 0.1 to 2, however, it would have been obvious to one of ordinary skill in the art to include the alkaline electrolyte in a 1:1 relationship with the zinc alloy of the negative electrode in order to effectively transfer ionic charge between the electrodes during the charge/discharge cycle of the battery. One skilled in the art would be motivated to use an excess amount of electrolyte to ensure that a sufficient amount of electrolyte is present to transfer ions in the electrolyte solution. For example, some electrolyte may be lost through side reactions with the electrodes or by leakage from the battery. Further, one skilled in the art would be motivated to use a lesser amount of electrolyte to prevent reaction of the electrolyte with the anode active material. Thus, one skilled in the art would understand the potential tradeoffs between adding an excess amount of electrolyte and adding a lesser amount of electrolyte and could alter the amount to achieve the desired effects of the battery.

#### *Examiner Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-

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6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

/Mark Ruthkosky/

Primary Examiner, Art Unit 1795